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# performance PC

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## Wireless Fun

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### Review of

*Microsoft Wireless Optical Desktop Pro 2.0  
Nordel 2U Entry P4*

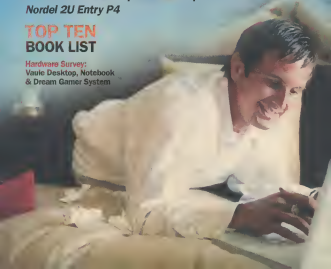
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## Wireless Makes Waves All Over

**I**t's amazing the way that old becomes new once again. When I was a lad (commonly the prelude to a long and boring story about some old geezer's lost youth), my grandfather used to talk about listening to "the wireless" - by which he meant listening to the radio.

Since that time, the word "wireless" has always invoke in me a feeling of nostalgia for the big, old radios of my father and grandfather's time - with cream-colored plastic buttons, dials, cranks, knobs and switches. Imagine my surprise a few years ago when "wireless" re-emerged as a way of describing a radio-based data transmission technology that could allow users to access their computer networks and their email remotely.

It was a little ironic, to say the least, given that we had just been through an era when accessing television signals wirelessly (through off-air television broadcasts) had given way to superior, wired cable television technology - and then cycled back to wireless reception of television signals through popular, low-cost satellite receivers. Similarly, the wireless conversation went from being an eccentricity (through the era of "Walkie Talkies" and CB Radios) to an important part of everyday life (with the advent of today's mobile phone culture).

And at home, the tethered telephone has given way to the "cordless" 2.4 GHz telephone handset used to allow us to wander through our homes having conversations as we carry out the most mundane of household chores. And even amongst those of us who have decided that holding a highly powerful wireless transmitter/receiver (ie. a mobile phone) up against our skull isn't the safest way to proceed through life - and opted instead to use a handset for that task - many have opted ironically to use a wireless headset that can send

a signal from the mobile phone to the headset (typically using Bluetooth).

So we have now arrived at a place where "wires are bad" and no effort should spared in making sure they are eliminated from our home and office lives. At home, those wires are being eliminated through the use of 802.11-based (or Wi-Fi) wireless networks - through which we can send all manner of data around the house, including voices, audio, email and Web browsing files. The other night, for example, I watched a digitally-recorded episode of one of my favorite TV shows (*The West Wing*) from the comfort of my bed by wirelessly accessing the video file on my downstairs server using my wirelessly-connected notebook computer.

OK, that's a bit of a geekish scenario - but you get the idea. Wireless is hotter than it's ever been and, in this issue of Performance PC, we have aimed to provide you with a good look at wireless products and technologies that are making a difference to other lives. We hope you enjoy it.

P.S. For those of you who have faithfully read the first four chapters of my book - *Inside the Bubble* - be assured that we will continue our monthly glimpses inside the "dot com" world of 1999-2000 in the next issue. **P**

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## Nordel 2U Entry P4

By *Miner Cook*

In December, we reviewed Nordel's high-end dual Xeon with a hot-swap SCSI RAID. This month, we have their entry-level 2U server on the table, to take a look at some of its strengths, weaknesses, and practical usage.

This server is definitely entry-level, with a single 2.4 GHz P4 CPU, a relatively low RAM limit of 2 GB (comes standard with 1GBMB), a single 80 GB IDE hard drive, and a low-power 300W supply. But what this machine lacks in muscle, it makes up for in price — at \$1285 for the standard configuration, you get a rack-mounted server that's ready to go. In actual use, there are few situations where one hard drive, without redundancy, would be sufficient. Most purchasers will probably want to add at least a second drive in a RAID 1 configuration, which is how our test unit shipped, in order to protect your data.

The motherboard is an Intel 5845WD4-E, with an on-board Promise IDE-RAID controller and dual 100 Mbit ethernet. This is really the board's primary advantage: the reliability that one gains over a desktop motherboard. Without this advantage, one can spend for too many hours fussing over more typical, half-baked motherboards' quirks, which only become apparent under the heavy load and unique usage patterns that many servers are subject to.

The rack mount case is not a model of easy access, so this server is a machine that you'll want to be sure to set up right the first time, working in a cramped collocation space would be next to impossible. One aspect that I found puzzling was that although the unit comes with hot-swap drive bays, the case must be opened in order to get inside, thanks to the awkward IDE cables. Still, it's altogether better than most I've seen, and if you don't need to worry about perfect uptime, this is not enough of a problem to justify the extra \$1000 more sophisticated setups will run you.

In terms of practical applications for this server, I recommend usage where either disk space is at a premium and the data being stored is not mission-critical, or for tasks that require a reliable network connection, but are neither dependent on complex configurations nor breakneck system performance. This machine would perform beautifully as a standalone web or streaming media proxy, or as a departmental file server (with RAID-1 and backups carefully in place, of course!).

A number of Network-Attached Storage devices have come to market recently, they're small, fast, and relatively cheap. One area that they are noticeably lacking in, though, is expandability. For not much more of an investment, Nordel's 2U server provides similar features to these smaller, task-oriented devices, while allowing you to expand as



necessary. These 80 GB hard drives are extremely cheap, but by next year drives nearly twice as large will be standard, combined with hot-swap Serial ATA, this server has room to grow. ■

*Miner Cook, Systems Administrator  
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# Microsoft Wireless Optical Desktop Pro 2.0

By Keith Schenjo-Roberts



these devices, as the laser-mouse is not as flashy as other optical mice, and the keyboard does not use any bright LEDs to indicate when you are in shift mode – the latter being a real disadvantage.

## The Keyboard

While they're usually considered "sexy" in the realm of computer hardware, for the vast majority of computer users out there the keyboard is the single most often used computer peripheral device. A Rodney Dangerfield device if ever there was that definitely doesn't get any respect, as they have become commodity items usually selling for \$20 or less at any computer store. But if you write for a living like I do, you quickly come to realize that a good keyboard can make all of the difference when it comes to comfort. That's where the new Microsoft Wireless Optical Desktop Pro 2.0 comes in – a wireless version of their "natural" keyboard style that is accompanied by the next generation of ergonomic mouse makes for a good desktop combination aimed to reduce wear and tear on your digits.

## Setting Things Up

Installation was straightforward. The wireless base-station sports a dual USB connection and the green keyboard connector, which both need to be plugged in. This begs the question as to why a single USB connection cannot be used for both purposes – but then again it's not like you can do anything else with the keyboard connection on your PC except to plug a keyboard into it. A prominent tag connected to the cabling helps ensure you don't begin plugging anything in until you have first installed the necessary software. The software installation was a snap, and uses graphical means to guide you through the process – if only all software installations were this easy.

Informal tests showed that the keyboard and mouse has an effective range of about 10ft or so, though I found the response of both keyboard and mouse were greatly improved when the base station didn't have to work through the bulk of a heavy wooden desk, and was placed more or less within line of site of both keyboard and mouse.

The mouse and keyboard each took a pair of AA batteries (included), which Microsoft says should last for about 6 months before replacing (check). Microsoft has obviously concentrated on reducing the amount of power required to run

Microsoft's "Natural" keyboards are ergonomically-designed, with the main part of the keyboard "split" into two sections, each section containing the "home keys" for each hand. Each section is also angled, designed to match the natural position your hand wants to be in. Below the keyboard is a hand-rest, a feature introduced with this type of keyboard but increasingly standard with many non-ergonomic keyboards. The overall intent is to reduce the amount of stress on your fingers and hand. With the Natural keyboards you either like them or you do not – personally I love them and find I am a much faster typist when I use them, and most touch-typists I know swear by them. But if the Natural style is not for you, Microsoft offers the exact same model using the standard rectangular keyboard layout. Despite the curves, this keyboard is designed to fit into a standard under-desk keyboard housing, so size isn't a problem.

Unlike their previous keyboards, this version is set in a black casing, as most translucent black keys. Some people think it looks cool, others think it looks cheap – if you like black computer components you'll like the keyboard. (And I can't help think that the translucent keys beg for some

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Continue on page 10





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## Bluetooth to the rescue

By Babak Khoshdel

If you have ever tried to exchange information from one electronic device to another, you know how frustrating it can be getting the right cables, and software working together. It almost never works on the first trial. The information age is clearly more about communication than hardware. Cell phones, pagers, personal digital assistants, laptops, digital cameras and MP3 players, all help people communicate, but these devices do a poor job at communicating with each other.

Up until recently, if you wanted to transfer information between your PDA and your laptop, you had to have the proper serial cables to connect the two machines together, or sometimes if you were lucky and had infra red on both machines, you could use that. However there was never really a true standard for communication, making the devices incompatible. For example, you could synchronize your laptop with your pager and your laptop with your PDA. But you could not synchronize your PDA with your pager. Even more difficult was trying to find the right cable that would match both devices.

That was when Bluetooth was created to get an end to all this confusion and frustration. Bluetooth is a standard that allows digital devices to communicate with one another using radio frequencies. Bluetooth will allow any device with a Bluetooth radio chip to communicate with another, anywhere in the world. Bluetooth is also a means to connect your printer or scanner to your computer without ever having to plug anything in the back of the computer again.

Imagine being able to take your pictures with your digital camera and uploading them to any laptop without using any wire and then connecting your laptop to the internet through your cell phone and emailing the pictures or downloading music from the net, and transferring them to your MP3 player with just a few clicks and then listening to your music with wireless headphones.

Basically Bluetooth is a means to do away with wires. The days of having multiple cables running everywhere behind your computer will soon be a thing of the past.

When two devices attempt to communicate with each other, they have to establish two main things: the means of communication and the language or protocol of the communication. The means of communication can be anything from a serial cable, to infra red to Bluetooth.

As with every new technology, there are always problems to deal with. Bluetooth technology works with radio waves. The frequency assigned to Bluetooth is 2.4 GHz. This is the same frequency that is used by most cordless telephones, and other wireless devices. When a device is not connected to any network, it is in standby mode. While in Standby mode, it wakes up just enough to listen to any nearby traffic. If it detects no traffic, it goes back to standby. This repeats the same thing every 1.28 seconds. When a device tries to connect to your device, you get a message from your device asking for your permission. Once the connection is established, the transfer is as easy as 1-2-3. You can connect up to 8 Bluetooth devices on the same network.

### Is it the future?

Right now the future of Bluetooth is wide open. Whether or not the technology will live up to its capabilities is anyone's guess. A very popular application right now is centered on cell phones, particularly as a means of wireless access to the internet. A cell phone equipped with Bluetooth technology can link a laptop computer to the internet without using any wires. Another possibility is a three-in-one cell phone. While in the office, the phone operates as an internet device, avoiding any phone charges. On the road, the phone will function as a standard cell phone, and once you arrive home, the same phone can operate as your home phone. No more juggling multiple telephone numbers anymore. We have developed the tools to help us communicate, the next step is to help our devices to communicate with one another. For Bluetooth to be successful, it will need to be affordable as well as energy efficient on the devices. For more information on Bluetooth devices visit [www.bluetooth.com](http://www.bluetooth.com).

### Microsoft Wireless Optical Desktop Pro 2.0

Continued from page 8

modder out there to put some light source underneath it). Arguably the more important factor is how it feels to one's fingers, and I can say that Microsoft has done a good job. The keys respond to a light touch, but still have a solid feel to them — no mashing of keys needed here.

In addition to the regular keys this new keyboard adds 17 additional buttons above the function keys along the top. The first three buttons open up the standard Windows directories for My Documents, My Pictures and My Music respectively. Then comes a set of keys for playing video or music files,

including a Play/Pause button, Stop, Increase/Decrease volume along with buttons to take you to the previous or next item on your playlist. A thankful addition to this collection of buttons is a Mute button, for when you need to kill the sound quickly. After this are the internet set of buttons, Mail, WebHome (which defaults to your browser's home page) and Messenger. Above the numeric keypad are the final 3 keys, Calculator, Log Off and a recessed Sleep key. While these keys are a good addition, from I can say that I almost never remember to use these keys, and usually just opt for adding shortcuts or clicking icons to do the same.

Continued on page 22



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## "These Games Still Rock" Buying Arcade Classics from StarROMs

By Keith Schengul-Roberts

There is a growing community of people who enjoy playing vintage games on their PC, and there are an increasing amount of manufacturers (such as StickStick and X-Arcade) who are beginning to cater to this market, selling everything from individual arcade controls to full-blown customized arcade boxes.

Using an emulator like MAME (short for Multi Arcade Machine Emulator) you can now play these games on your computer that once ate away at your allowance quarter by quarter. But one of the main problems is that while the emulators are legal, unless you had an actual copy of the original game (or its hardware composing the original ROM board) you could not legally play these games. That means that the vast majority of ROMs are being illegally distributed over the Internet. While many are content with this situation, there are people who want to ensure that what they are doing is on the up-and-up, but for the most part the firms that retain the licenses to the old arcade classics haven't been interested in tapping into this market, or at worst, see rampant piracy.

But now there is an alternative: StarROMs in conjunction with Atari now provides legitimate copies of game ROMs that you can pay for and download onto your computer, and can be played through an emulator like MAME.

The games are priced not in dollar values but through credits. For a cost of about \$20 U.S. you get 100 credits, which can then be used to purchase ROMs and the licenses for various games. The number of credits a game costs is a relation between how old and how popular the game was. The oldest games, like the black-and-white Atari Football or Atari Baseball cost 8 credits apiece, while the most expensive titles are either relatively recent or all-time classics, like Asteroids, Tempest, Missile Command or Joust, which will set you back between 22-24 credits apiece. Any credits left over in your account at the end of your purchase are held over until the next time you sign in a buy more.

What follows is an interview PerformancePC Canada with Keith Schengul-Roberts managed to arrange with StarROMs Co-Founder Frank Leblay.

**KSRR:** How did you go about making the idea behind pressing old arcade ROMs into a business?

**FL:** My business partner, Jay Coulson, originally suggested the idea of getting into classic arcade games. We saw a growing nostalgia for the "old school" games, and a significant market opportunity. We were both familiar with MAME and emulators, and were impressed with the number

of users. Plus the idea of offering the original versions of these games made emulators the way to go, as far as we were concerned.

The business concept itself was very similar to iTunes, but for old video games. We're giving our customers a legal solution, where for a few bucks each, they can download the classic games they remember. The idea had a lot of appeal to us as a means of preserving and protecting an important legacy for anyone who grew up or went to college in the 80's or early nineties. And of course, today's kids will someday be classics too, so we think this business has a future.

Yet it seemed like copyright owners were more interested in trying to stamp out this activity than they were at generating new revenues from their legacy assets. So we spent quite a bit of time developing the materials and information to educate the owners of vintage games about emulators and the potential market opportunity, before we started making cold calls. We had no prior relationships to work from.

**KSRR:** How did you go about convincing Atari to sell their ROMs through your firm?

**FL:** As luck would have it, our timing was good when we approached Atari. They were already looking at the ROM piracy issue, and trying to establish a strategy. They took the time to educate themselves and listen to what we had to say. The case is actually very compelling once you get over the overly simplistic "emulators=piracy=bad" way of thinking that has permeated the industry, and realize that there is huge interest in these games, and a frustrated audience that, for the most part, will only resort to piracy as a last alternative.

By providing a legal opportunity to download ROMs, Atari has generated a new revenue stream, but perhaps even more importantly, they're embracing the needs of some of their biggest and most loyal fans. When you think about it, why would you want to develop an adversarial relationship with a group that represents some of the most loyal devotees to your brand? Or even worse, why would you want to send the message that you don't care about your rights to these games any more?

Furthermore, the demographic for our audience is much broader than what you see for most modern video games. The largest segment of our customers are in their 30's, followed by users in their 40's, and then those in their 20's. It's not kids. We're dealing with customers who have resources but who aren't out buying modern video games.

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## These Games Still Rock

Continued from page 14

**KSR:** What percentage of profits does Atari see from each sale?

**FL:** I can't disclose the specific terms of our license with Atari, but a large percentage of each sale goes to royalties, which makes sense because they own the rights to these games. But it's a great deal for them too because they have a marketing or development expense associated with what we're doing. Aside from the up-front legal work to enter into a licensing agreement, all they need to do is cash the checks we send to them. That's pretty hard to beat!

**KSR:** Have you heard anything from the original game creators and coders?

**FL:** We have had a number of interesting and valuable contacts from some folks who fall into this category. In one case, we were actually able to put one of the original game developers in touch with someone who was willing to pay top dollar for his expertise. I thought that was pretty neat.

**KSR:** What are your most popular titles?

**FL:** Asteroids, according to information I've seen, is the most popular arcade game of all time, so as you would expect, it's at the top of our list of sellers. Centipede, Missile Command, and Tempest are right up there too. The appeal of these games is tremendous because they are easy to learn but incredibly challenging to master.

**KSR:** What sort of reaction have you had from the arcade gaming community?

**FL:** Simply put, these games still rock.

They all work great on a PC too, without requiring any

special controls if you don't have them. So as you might expect, the reaction from the arcade gaming community has been extremely positive. The amount of "fan mail" has been somewhat overwhelming. We make an effort to read and respond to all feedback so while we're happy about all the positive feedback, it's actually been somewhat overwhelming!

**KSR:** Is there any release schedule in place for as-yet-unreleased Atari game ROMs?

**FL:** We plan to significantly expand our offering of Atari and non-Atari games over the course of this year, although we have no definitive schedule at this point. As a startup, our resources are finite and we've put customer support at the top of our list. Jay and I have quite a bit of experience with Internet businesses and we have no desire to build a house of cards. Fortunately, I think we've got the infrastructure in place at this point to significantly scale up our product offering, and a customer service track record that is pretty impressive, so I think this year we'll be able to ramp up quite a bit.

**KSR:** What can we expect to see from StarROMs in the future?

**FL:** This year should bring a significant expansion of titles offered, both by increasing our offering of classic arcade games, and by expanding into console titles, starting out with the classic Atari console games. ■

*Keith Schragoff-Roberts is currently co-authoring a book called "How to Build Your Own Arcade Bar" for Scarscrow Press, and is now the proud owner of legitimate copies of Asteroids, Centipede, Klax, Major Havoc, Space Duel and Tempest.*



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## Wireless in So Many Ways

There's no getting away from it — PCs are going wireless. From wireless keyboards and mice to Bluetooth connections for printers to Wi-Fi connections for high-speed wireless network and Internet access, wireless is becoming the way to go.

In this issue of PerformancePC, we look not only at the wireless technologies that connect directly to the average desktop PC — but also at a number of wireless devices that can help you bring the computing experience out into the field (or wherever you happen to be standing at the time). For that reason, we look at everything from “picture phones” that allow you to take and then email digital photos directly from your mobile phone to new wireless phone offerings that let you eliminate your home phone entirely.

### CityFido

The first of these wireless offerings is Microsoft's CityFido service. Microsoft introduced the service to the Vancouver market in October as the first “home and mobile” service in the country. Vancouver consumers can switch their land line phone to a mobile service with Microsoft — and carry their existing landline telephone number with them — at a cost of C\$40 per month. The service provides unlimited local calling and Microsoft offers a series of competitive long distance plans to compete with Telus, the primary landline carrier in the region.

Microsoft CEO and President Andréessen said that the development of the service represents a growing trend — particularly amongst young couples and single professionals — to abandon their landlines and go completely mobile. “A Yankee Group report released earlier this year indicates that wireless subscribers in the U.S. now spend, on average, more minutes using wireless than traditional landline phones,” he observed. “Studies also show that consumers between the age of 18 and 34 are the most eager ‘switchers’ to wireless. They see wireless as an outdated technology that no longer matches their lifestyles. And it is no surprise, given that now wireless communications offer more benefits than wireline, at an affordable price.”

### Telus Mobility Picture Messaging

Late last year, Telus Mobility entered the camera phone and picture messaging market with new wireless hardware



By Geoff Wierschinger

and service offerings. The company said at the launch that its camera phone was the first to allow users to share their pictures instantly — and even attach voice or text messages to them — by sending them directly to other camera phones. The company said that users can also send their photo messages to any e-mail address, store them in their own secure online photo albums on Telus Mobility's Web site or send them to major photo finishing retailers for printing.

Telus suggests that as they are already hugely popular in Europe and Asia, camera phones are set to take off in Canada. The company cited a recent report by industry magazine RCR Wireless News, in which new research showed global sales of camera phones hit 25 million in the first half of this year, already surpassing the sales of digital cameras. While camera phones will make up just 15% of wireless phones worldwide in 2003, penetration is expected to surpass 50% by 2004.

Telus Mobility's first announced camera phone is the LG 5450, which lets users send and receive images with sound and text directly to other camera phones. The LG 5450 is both a fully functional tri-mode digital wireless

phone and a 300k pixel digital camera with high-resolution colour screen, self timer and the ability to store up to 30 pictures. Telus claims that unlike some competing products, the LG 5450 is fully integrated and needs no accessories to take pictures — users just point and click.

The LG 5450 costs \$379.99 for users signing up for month-to-month service or as little as \$149.99 for clients who select a term contract. Customers pay a standard charge of 25 cents for each picture message sent from anywhere within Telus Mobility's next generation 1X digital service area, which now covers 27.3 million people across Canada, or 67% of the population.

Using their camera phone's menu, users can save pictures to their own online photo albums on TELUS Mobility's Web site. Telus says storage is free for 60 days, after which users can choose to purchase permanent storage. They can organize their pictures into slide shows and albums, customize with titles and descriptions, add links



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- For order HP P3-10 w/CDRW \$1,699
- For order Toshiba P4-1000 w/DVD \$999





Component	CSP (p.25)	TigerDirect (p.17)	MCIE (p.1, 32)	PowerPC (p.3)
CPU	Intel P4 2.4 GHz	AMD Athlon XP 1600+	AMD K8 1.5G AP+ 1180+	Power4 2.0GHz 6070348
Motherboard	ASUS P4SD80 MB E-550	PS-41000?	ASUS A7N80VM-E Deluxe	ASUS P4 SD 8600B
RAM	512MB DDR333 DIMM	512MB DAP 137 1.6V 4.0	2GB40 DDR40 PC1700	2GB 256MB
LAN Ports	1 x RJ-45 RJ-45/10/100T	8 x USB 2.0		
USB	17 USB2Ports 8Ports	4x1	1 x USB40	8x Bus 4
Video Card	GeForce4 MX440 128MB	GeForce 4 MX440 128	ON 128MB	On Board
Monitor	17" Flat Screen Monitor	17" LED	17" 17" CRT	8-inq 17" CRT
Hard Drive	Maxtor 7200RPM H.D	80GB Ultra ATA-7200rpm	MAXTOR 80GB	Samsung 80GB
Optical Device	1 x DVD+RW 8 DVD+RW 8 16x DVD	48x16x DVD+RW DVD-Lite	16 CD-RW DVD+RW	16 CD-RW DVD+RW
Sound Card	1 x 3D Sound	Integrated Audio	ON BOARD	On-Board
Speakers	500W Subwoofer	No speaker	120 WATTED SPEAKERS	60W Stereo Speakers
Printer			HP 3560 COLOR PRINTER	Lexmark 225 Color Inkjet
Scanner				
Case	18 300W ATX Tower Case	Mid-Tower ATX Chassis w/CDD FS	17" ATX w/200W PS	HP Tower w/200W PS
Setup				
Mouse	Wheel Mouse	Sony/Max Scroll PS/2 Mouse	MS OPTICAL MOUSE	Agere Wheel Mouse
Keyboard	Internet Keyboard	Logitech Internet Keyboard	MS MS-IMB00A KB	Agere PS Keyboard
Software	App Included	MS Windows XP Home	MS Windows XP Pro	MS Windows XP Home
Warranty	Free Tech Support	1 year limited warranty	1 Year Limited Warranty	N/A
Price	\$396.00	\$371.67	\$403.00	\$495.00
Shipping	Free	Free	Free	\$15.00
PST	\$24.00	\$13.95	\$24.98	\$35.00
GST	\$60.00	\$30.00	\$30.51	\$10.00
URL	http://www.csp.com	www.tigerdirect.com	www.mcie.com	www.powerpc.com
Phone	1-844-438-0435	1-800-522-6232	1-888-HUGOB88	814-729-0000

Microsoft Wireless Optical Desktop Pro 2.0

Continued from page 10

thing. The only ones I end up using consistently are the video play buttons (especially when watching something in full-screen mode) and Calculator, because hitting a custom button is preferable to hunting through several levels of Start button menus to find it.

The keyboard adds in two other features which may take a bit of getting used. One is the extended Delete key which spans two areas of the keyboard, replacing the arguably obsolete Insert key. I love this feature – innumerable times I have hit the old Insert when I didn't

mean to, then proceeding to overwrite subsequent text. I don't think I've used the Insert key extensively since the days when WordStar was the word processor of choice, so this is a good addition. My personal pet peeve is the P-Lock button, which enables you to "stuff" the function keys, so now each function key toggles between two sets of features. This is a an "improvement" I could do without, as I keep forgetting what mode I am in and end up – and without any LED to indicate which mode I am in, I usually end up hitting a function key, and then hitting the P Lock key and then go back to the original function key to do what I wanted it to do in the first place.

ATX	PC Monitor	A-Disk
Intel P4 2.0GHz, 800MHz	Intel Celeron 2.4 GHz	Intel Celeron 2.4 GHz
ASUS P4P8X, ASP8X	Aspen AAA50	ASUSP30003-MR
256MB PC2000 (800)	256MB PC2700 (800MHz)	256MB PC2000 (800MHz)
		8 USB 2.0
Integrated 80/100/1000	10/100 Network Card	10/100 Network Card
ATI Radeon 9550SE	Galaxy2 MX200	3D Sapphire 4X
NBC AS15P 17" CRT	Philips 807 17" Flat	Sony W72 17" CRT
Sonyas 8008 IDE	Master 40 GB	Sonyas 80 GB
Leadin 52x24x52 CD-RW	Leadin 52x24x52 CD-RW	LG 52x24x52 CD-RW
On board 5.1 Audio	Acry 99500 PC	Sony/Max Digital 30
	Included	240W Speakers
Lenovo C70S color laptop	Open C620X laptop	Open 8-Disk Ingot
		Acry/Lead 50000-4000
19" Tower w/300W PS	19" Tower w/300W PS	19" Tower w/300W PS
MS Optical Mouse	Included	PS/2 3B Wheel Mouse
MS Internet KB	Included	PS/2 Windows KB
Win XP Home SP1G mini	MS Windows XP Home	MS Windows XP Home
1 yr warranty	1 yr warranty	1 yr on parts
\$399.00	\$399.75	\$399.00
5.01	5.00	5.00
\$34.25	\$29.01	\$36.23
\$20.30	\$20.17	\$21.61
http://china.asus.com/pc	www.pentec.ca	www.lenovo.com
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Overall I liked the feel of the keyboard, and despite the lack of a shift indicator light and the P-Lock button, it is definitely a step in the right direction for ergonomic keyboards.

### The Mouse

The mouse is Microsoft's most recent addition to their optical lineup, and while it is made primarily of plastic, the two AA batteries gave it the right amount of "heft" – not too heavy, and not too light. It handled well and was easily as precise as a traditional mouse.

Though Microsoft claims that the mouse is ergonomically designed to fit in either hand, the design shows a preference

for right-handed users – besides its shape there is no forward or back button built into the right side of the mouse, which is not where a scrollwheel would expect it.

One of the interesting features of this new mouse was the scrollwheel with built-in "tilt-wheel" technology. The tilt-wheel function allows you to scroll sideways. I found myself underwhelmed by this feature. While it was nice to be able to pan across recent pictures of Mars on my Web browser, or zip across columns on a spreadsheet, it didn't end up using this feature much. Unlike many other mice, this scrollwheel

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Component	ASUS (p.25)	TigerDirect (p.27)	NCIX (p.2, 32)	PeripheralsPC (p.28)
CPU	Intel® Core™ i3-2100	Intel® Core™ i3-2100	Intel® Core™ i3-2100	Intel® Core™ i3-2100
Motherboard	ASUS P11M LE	ASUS P11M LE	ASUS P11M LE	ASUS P11M LE
RAM	4 GB DDR3 1333 MHz	4 GB DDR3 1333 MHz	4 GB DDR3 1333 MHz	4 GB DDR3 1333 MHz
I/O Ports	1 Front USB 3.0, 1 Front USB 2.0	2 USB 3.0, 1 Front USB 2.0	2 USB 3.0, 1 Front USB 2.0	2 USB 3.0, 1 Front USB 2.0
LAN	Realtek RTL8168E LAN	Realtek RTL8168E LAN	Realtek RTL8168E LAN	Realtek RTL8168E LAN
Video Card	ASUS GeForce GT 520	ASUS GeForce GT 520	ASUS GeForce GT 520	ASUS GeForce GT 520
Monitor	23" LED	23" LED	23" LED	23" LED
Hard Drive	500 GB SATA 6 GB/s	500 GB SATA 6 GB/s	500 GB SATA 6 GB/s	500 GB SATA 6 GB/s
Optical Device	24x DVD	24x DVD	24x DVD	24x DVD
Sound Card	ASUS Realtek ALC887	ASUS Realtek ALC887	ASUS Realtek ALC887	ASUS Realtek ALC887
Speakers	ASUS 2.1	ASUS 2.1	ASUS 2.1	ASUS 2.1
Printer				
Scanner				
Case				
Texture		Weight: 6.1 lbs	Weight: 6.1 lbs	Weight: 6.1 lbs
Mounts		Weight: 6.1 lbs	Weight: 6.1 lbs	Weight: 6.1 lbs
Keyboard				
Software	ASUS	ASUS	ASUS	ASUS
Warranty	ASUS	ASUS	ASUS	ASUS
Price	\$299.99	\$299.99	\$299.99	\$299.99
Shipping	Free	Free	Free	Free
PST	ASUS	ASUS	ASUS	ASUS
QST	ASUS	ASUS	ASUS	ASUS
URL	www.asus.com	www.asus.com	www.asus.com	www.asus.com
Phone	1-800-451-4511	1-800-451-4511	1-800-451-4511	1-800-451-4511

## Microsoft Wireless Optical Desktop Pro 2.0

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does not have click-stops – instead it simply glides smoothly up and down. I prefer mice with this feature, as the click-stop adds to the tactile feel of things when scrolling and allows for precise scrolling, but on the flipside the absence of click-stops means that you can scroll more quickly with less resistance. On the whole if I had to pick between a mouse with this tilt-wheel and one that only scrolled vertically but had click-stops, I'd go for the latter.

## A Good Combo, With Room for Improvement

On the whole I found the Microsoft Wireless Optical Desktop Pro 2.0 to be a good package. If you are looking for a comfortable and ergonomic wireless keyboard and mouse combination, Microsoft's offering has a lot to recommend it. What keeps me from giving this a glowing endorsement are the little annoyances – lack of a shift indicator and the F Shift function on the keyboard, and the oddball tilt-wheel scroll-wheel without click-stops on the mouse – on an otherwise excellent pair of computer peripherals. A step in the right direction, but there's still more that can be done. – P



ATC	PCMaster	A-Lite	Sony
Intel P4 2.8GHz	Intel P4 2.8GHz	Intel P-M Celeron 1.4 GHz	Intel P4 3.4GHz
ATI M6722 Chipset		Intel 855GM System Chipset	Not Listed
512MB DDR	256MB DDR	256MB DDR	256MB DDR
\$1,888.20	4,188.20	2,188.20	
Integrated 10/100 & Wireless Lan	Integrated 10/100 base-Tx	Integrated 10/100 Ethernet	10/100 Base-TX Chipset
Thunderbolt/Mini DVI	ATI Radeon 980 540M	Integrated Graphic Controller	Nvidia GeForce4 420
15" XGA TFT	15" XGA TFT	14" XGA TFT	15" XGA TFT
4GB	3GB	3GB	4GB
CD-RW/DVD Combo	CD-RW/DVD Combo	CD-RW/DVD Combo	CD-RW/DVD Combo
Audio Dream AD1861B	SigmaTel STA AC9007	AC9700B Software Sound	Audio Output Sound Card
15hr. stereo speakers	2 internal stereo speakers	16hr Stereo Speakers	Built-in stereo speakers
Weight: 7.0 lbs	Weight: 8.3 lbs	Weight: 8.3 lbs	Weight: 7.3 lbs
Integrated	Integrated	Integrated	
Integrated	Integrated	Integrated	
MS Windows XP Home	MS Windows XP Home	MS Windows XP Pro	MS Windows XP Home
1 yr parts and labor	1 yr warranty	3-year parts and labor	One yr parts & labor
\$1,880.00	\$1,815.00	\$1,880.00	\$1,888.00
Cover	Cover	Cover	Free
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\$165.10	\$134.39	\$127.32	\$140.00
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### Wireless in So Many Ways Continued from page 18

to Facebook sites, output their pictures to their own printers, or send them via e-mail to major photo-finishing retailers for printing.

#### Nokia 5140

At a major press event in New York late last year, Nokia unveiled a brace of new phones — some of which bring Motorola MIKE-style “push to talk” features so that you can instantly access a pre-defined group of people (as you would with a walkie-talkie in “broadcast” mode) without making a

phone call. The most interesting of these is the new Nokia 5140 (pricing and availability in Canada for this unit was not available at press time).

Nokia says the 5140 is the world's first GSM push-to-talk handset, sports-impresed phone. Along with its ability to quickly connect users at the push of a button, Nokia says the 5140 phone also includes a number of unique features designed for the “active-minded consumer” such as a digital compass, Fitness Coach application and a built-in VGA camera.

The GSM/GPRS/EDGE Nokia 5140 phone will be available in a GSM 900/1800/1900 MHz version primarily

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Component	GSP (p. 21)	GameDirect (p. 21)	MDK (p. 2, 22)	FourthPC (p. 21)
CPU	Intel Pentium 4 Processor	Intel Pentium 4 Processor	Intel Pentium 4 Processor	Intel Pentium 4 Processor
Motherboard	Asus P4B55 Deluxe	Asus P4B55 Deluxe	Asus P4B55 Deluxe	Asus P4B55 Deluxe
Ram	2GB DDR2 800MHz	2GB DDR2 800MHz	2GB DDR2 800MHz	2GB DDR2 800MHz
I/O Ports	8 USB 2.0, 1 FireWire	8 USB 2.0, 1 FireWire	8 USB 2.0, 1 FireWire	8 USB 2.0, 1 FireWire
Case	Antec P180	Antec P180	Antec P180	Antec P180
Video Card	NVIDIA GeForce 7800 GS	NVIDIA GeForce 7800 GS	NVIDIA GeForce 7800 GS	NVIDIA GeForce 7800 GS
Monitor	22" LCD	22" LCD	22" LCD	22" LCD
Hard Drive	160GB SATA	160GB SATA	160GB SATA	160GB SATA
Optical Device	CD/DVD	CD/DVD	CD/DVD	CD/DVD
Sound Card	Realtek ALC880	Realtek ALC880	Realtek ALC880	Realtek ALC880
Speakers	2.0	2.0	2.0	2.0
Printer				
Scanner				
Case	Antec P180	Antec P180	Antec P180	Antec P180
Extra	2GB DDR2	2GB DDR2	2GB DDR2	2GB DDR2
Mouse	Logitech	Logitech	Logitech	Logitech
Keyboard	Logitech	Logitech	Logitech	Logitech
Software	Not Included	Not Included	Not Included	Not Included
Warranty	3 years	3 years	3 years	3 years
Price	\$1,299.99	\$1,299.99	\$1,299.99	\$1,299.99
Shipping	Free	Free	Free	Free
PST	\$199.99	\$199.99	\$199.99	\$199.99
OST	\$199.99	\$199.99	\$199.99	\$199.99
UPL	\$199.99	\$199.99	\$199.99	\$199.99
Phone	1-800-451-1111	1-800-451-1111	1-800-451-1111	1-800-451-1111

## Wireless in So Many Ways

Continued from page 25

for the Europe/Asia market and in a GSM 850/1900/1800 MHz version primarily for the Americas market. Both versions are expected to be available during the 2nd quarter of 2004.

The company says that with just the push of a button, Nokia 5140 phone owners can connect to friends and family by using the push-to-talk feature for quick voice communications, or to access the built-in VGA camera to communicate visually. According to Nokia, the push-to-talk feature can be used to quickly connect the user to one person,

or to a group of people, simply by using the convenient side-mounted key.

While the Nokia 5140 phone is the first Nokia GSM handset to feature push-to-talk capability, the company says it marks the first step as push-to-talk becomes an increasingly common function. During 2004, Nokia will introduce a full range of push-to-talk capable GSM phones, including Symbian OS-based smartphones. From 2005 onwards push-to-talk will become available for all Nokia GPRS/WCDMA phones. This "walkie-talkie" style push-to-talk feature of the Nokia 5140 phone is a half-duplex voice over IP (VoIP) solution using the existing GPRS and EDGE

NOTE	PCMaster	AliLink	Easy
Intel P4 3.2GHz	AMD K83200+	AMD K83200+ 3.2GHz	Intel P4 3.2GHz
Asus P4P800 Deluxe	MSI CMB MAG_750P 845PE	Intel SBT500V10 Dual Xeon	Not Listed
2x512MB DDR	512MB DDR660 PC2700	1GB DDR660 PC2700	512MB PC3200 400MHz
1USB 2.0			1 USB 2.0
2x 1x200 Capacit. Fan	10/100 Ethernet	10/100/1000 Network Card	10/100 Base T/TX Ethernet
ATI Radeon 9800 XT 256	ATI Radeon 9800 Pro	ATI Radeon 9800XT	Nvidia GeForce FX5200
Samsung 977T 15" LCD	NEC 1540R 15" LCD	Not Included	15" Flat Panel LCD
180GB 7200RPM	180GB 7200RPM	180GB 7200RPM	20GB 7200RPM
LSI 100MB/s +/ 4x	LSI 100MB/s 100MB/s Combo	LSI 100MB/s 100MB/s Combo	COMAR 340524 100MB/s
Creative Audio Analog Center	Creative Sound Blaster X-Fi Center	Avigata 2.33 Center 71	Creative Soundblaster Audigy
Creative Labs SB0550 5.1	Creative Inspire 9600	Creative Inspire 71 17300	True Studio w/Subwoofer
Canon C200 Color Inkjet	Canon C200 Color Inkjet		
HP ScanJet 3670	HP ScanJet 3670		
Seagate ST3400024	HP DC EX 17400 w/400W	Lenovo Removable PC200	Power
			Eye Pocket Pocket Video Recorder
MS Optical Mouse	MS Optical Mouse	Logitech Optical Mouse	PS/2 Optical Mouse
MS PS/2 Internal KB	MS Multimedia CD	Logitech 500 Dual Line KB	MS Keyboard
MS Windows XP Home	MS Windows XP Home	Not Included	MS Windows XP Media Center
1 yr parts & 2 labor	1 yr warranty	1 yr on parts	One yr parts & labor
\$2,999.00	\$2,992.55	\$2,999.00	\$2,999.00
Extra	Extra	Extra	For
\$224.00	\$224.00	\$229.79	\$225.00
\$219.00	\$219.48	\$219.81	\$219.00
http://www.ark.com/links.php	www.pcmaster.com	www.ali.com	www.easylink.com
804-871-8808	804-225-8182	804-882-5258/9	1-800-783-7803

data networks that are part of current GSM systems. Nokia says this method results in performance that on average is comparable to that of existing dedicated push-to-talk cellular networks.

To keep users oriented on the trail, an integrated digital compass displays the direction both graphically and numerically. After dark, a built-in flashlight helps to guide the way. For the fitness enthusiast, a new Fitness Coach feature uses training algorithms based on professionally recommended training principles.

Additional functionality of interest to the fitness minded is an interval timer and stopwatch for keeping track of

workout routines and an integrated FM radio to help make that time go by even faster. An optional Active Headset enhancement is available to provide easier wearability while on the move, and for increased resistance to bumps and splashes. The Active Headset features one button to answer and end calls and another that can be used to activate the push-to-talk capability of the Nokia 5140 phone.

Meanwhile, multimedia messaging capability allows for the sending and receiving of images, sounds and text. The Nokia 5140 phone also supports downloadable polyphonic ring tones, custom wallpapers and Java applications to customize the handset. ■

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- Compaq remote management controller
- Dual port PCI or PCI-X (not tested)
- Dual redundant power supply
- 4 hotswap drive bays - no hard drive or drive trays are included
- 40 rack mount fronted, 10V high mounting rails are sold separately
- Flange and I/O ROM
- Shipped with 1 year warranty with installation of processor (processor sold separately)
- 30 day parts exchange warranty - some have balance of factory warranty
- Detail Spec: <http://hpl.hp.com/go/compaq/whitepapers/proLiantDL580/whitepaper1.pdf>

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- 40 rack mount fronted, 10V high mounting rails are sold separately
- Flange and I/O ROM
- Shipped with 1 year warranty with some have balance of factory warranty
- Detail Spec: [http://www.ibm.com/go/whitepapers/Netfinity8500/whitepaper\\_PIV160](http://www.ibm.com/go/whitepapers/Netfinity8500/whitepaper_PIV160)

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- Shipped with 1 year warranty with installation of processor (processor sold separately)
- 64-bit SCSI architecture. 16 MBps Ultra160 SCSI (240MB/sec) and 3.3MBps (slow)
- Dual port PCI or PCI-X (not tested)
- Dual port SCSI (not tested)
- Dual redundant power supply
- 16 GB cache slots. 16GB ECC Registered memory included (up to 16GB not tested)
- 40 rack mount fronted, 10V high mounting rails are sold separately, drive-tray sold separately
- Flange and I/O ROM
- Shipped with 1 year warranty with installation of processor (processor sold separately)
- 30 day parts exchange warranty - some have balance of factory warranty
- Detail Spec: <http://hpl.hp.com/go/compaq/whitepapers/proLiantML570/whitepaper1.pdf>

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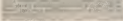
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(504) 535-8171

**Minivox Computers**  
(504) 582-0270

## COMPANY

**Natch Computers**  
(504) 587-5736

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**ACF Computer**  
(504) 514-8138

**Blue Collar Computer**  
(504) 462-8530

**CDPA Technology P24**  
2334 86th Ave  
(504) 889-8296

**Geoff Computers**  
(504) 534-8877

**Winnet Computer**  
(504) 889-8873

**Winnet Computers Ltd**  
(504) 889-8873

## MAPLE RIDGE

**Prime Time Computers**  
(504) 480-8555

**Technet Computers**  
(504) 480-8217

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**Am B Pc Computers**  
(504) 542-8222

**Bro M Bytes Computers**  
(504) 523-1885

**Fast A Nord Computer Services**  
(504) 554-8557

## ROSELAND/ROSELAND

**AcadCom Computers**  
(504) 894-8217

**Computer Depot**  
(504) 893-8130

**IDS Computers**  
(504) 891-7400

**W S Computers**  
(504) 898-7830

## ROSELAND/ROSELAND

**A-Link Computer**  
118 2888 Loughland Hwy  
(504) 408-8005

**Acce Computers**  
(504) 945-0093

## ROSELAND/ROSELAND

**Ever Tech Computers**  
(504) 887-4727

**F B Computers**  
(504) 887-4727

## ROSELAND/ROSELAND

**Adtek Computers**  
(504) 344-8203

**A-Power Computer (p.13)**  
101-11211 Bridgeport Rd  
(504) 273-8955

**A-Link Computer System**  
112 12111 Bridgeport Rd  
(504) 214-8173

**Altach Computers (p.18)**  
180 - 2338 No 5 Rd  
(504) 303 - 8833  
www.altachcomputers.com  
sales@altachpro.com  
altachprocomputers.com

**Infotek Technology Inc**  
188-11600 Bridgeport Rd  
(504) 214-1700

**Crashen Computer Store**  
(504) 303-2486

**CE Computer Center**  
(504) 278-9633

## City Computer Systems

**City Computer Systems**  
1154 - 12880 Clarke Place  
(504) 270-3347  
www.citycomputers.com  
citycomputers@netnet.net

**CCC Technologies (p.18)**  
145-4471 No 5 Rd  
(504) 521-1180  
www.cccit.com  
info@cccit.com

**Occasions Computer**  
(504) 241-0482

**IT Computer**  
1790-4111 Hazelridge Way  
(504) 373-1580

**Jason Computers Inc**  
(504) 373-8982

**Jenette Electronics**  
288-1888 Columbia Rd  
(504) 378-1388

**JPS Computers Inc**  
(504) 373-3186

**LTJ Advanced Technology Ltd**  
(504) 303-9020

## Machine International

**Machine International**  
**Machinery Corp. (p.28)**  
150 - 3761 Ascenda Rd  
(504) 204-8833  
www.machinery.com  
info@office.com

**Mart Computer Inc**  
(504) 273-3031

**MDI Interim Inc**  
118 2888 Loughland Rd  
(504) 288-1038

**Monitor King (p.3)**  
110-11508 Bridgeport Road  
(504) 270-8877

**www.monitorking.com**  
monitorking@netnet.net

**PC Computers**  
(504) 273-8982

**Power Computer (p.11)**  
Unit 140, 4520 No 3 Rd  
(504) 777-6111  
www.tanaga.com  
info@tanaga.com  
T L O Computers Inc  
(504) 272-8080

**Tec Tech Computer Systems**  
(504) 257-8295

**Toto A-Byte Computers**  
(504) 271-2222

**Unique Personal Computers**  
(504) 443-1387

## SHERIDAN

**Golden Top Computer**  
1200-1200 St  
(504) 588-8538

**AKF Computer**  
1063 - 1064 St  
(504) 533-8038

**Am Computers**  
(504) 542-8938

**Amtech Computers**  
(504) 551-4003

**B S Computers**  
(504) 582-3655

**Screen Computers Ltd**  
(504) 538-8885

**MIS Computers**  
1110 79th 12th Street  
(504) 572-8722

**Ta Tech Computers Ltd**  
(504) 524-4783

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**W F Computers**  
45 E Broadway  
(504) 874-8883

**Cell's Computer**  
3000 Grandcherryway  
(504) 437-5071

**CSP Computer (p.21)**  
5553 Kingsway  
(504) 438-8100

**www.cspcomputer.com**  
csp@cspcomputer.com

**Reagan Computers**  
111 W Broadway  
(504) 713-8838

**MDI.com (p.2, 32)**  
1013 W Broadway  
(504) 738-8855

**www.mdi.com**  
info@mdi.com

**FrontierPC.com (p.31)**  
105-1705 W Broadway  
(504) 738-8880  
http://www.frontierpc.com  
info@frontierpc.com

**Internet Data / Security**  
**Network (p.28)**  
2388 - 580 West Hastings  
(504) 881-8338  
www.securitynet.com

**Interlink Computers**  
4177 France St  
(504) 872-3337

**1-800-Recovery.com**  
243-2430 W Foster St  
(504) 881-3770

**Proton Computer**  
5275 Shalimar Street  
(504) 332-1758

**Neocode Software**  
288-425 Canal St  
(504) 533-0888  
www.neocodesoftware.com  
sales@neocodesoftware.com

**Shiny West Computers**  
**Internet Services (p.4)**  
(504) 412-1225  
www.shinywest.com  
sales@shinywest.com

**Shiny West Computers**  
(504) 575-8838

**Dale H Computers Inc**  
(504) 624-0288

**Endeavour Computers Inc**  
(504) 323-0033

**Earth Computers & Service**  
(504) 438-4952

**E Global Computers Inc**  
(504) 679-8175

**Business Pro Computers**  
(504) 671-8129

**Loyd Computers**  
(504) 278-8888

**Magel Computers**  
(504) 758-1386

**Merch Computers**  
(504) 322-3335

**Merch Computers**  
2887 Main Street  
(504) 873-4545

## THUNDERBOLT

**Thunderbolt (p.12)**  
171 East Park Drive  
Mishawaka, Indiana 46341  
1-800-888-8338  
www.thunderbolt.com

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